Next Generation Nuclear Plant Technical Issues and Licensing

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Background

- NGNP: a dual mission of electricity and process heat source by 2021 as authorized by EPACT 2005
- NGNP reviewed in 2005 (NERAC) and 2007 (National Academy Rev.)
- NGNP program funding has been problematic before FY08 delaying technical progress

NGNP Review (NERAC & NAS)

- Accelerate NGNP program to encourage industry partnerships
- Establish realistic technical goals (T_{GAS}< 850C; UO_2 Triso fuel kernel)
- Process heat => H2 flexible technology
- Use GENIV evaluation criteria to maintain NGNP connection to GENIV

NGNP Research Program

- DOE and NRC have completed a comprehensive PIRT process for all aspects of NGNP technology
- PIRT => key items to address:
  - Fuel qualification testing (in-reactor)
  - Materials studies (graphite/structures)
  - Development of computational tools to allow for design & safety analysis

NGNP Licensing Strategy

- NRC staff and DOE staff are considering a range of options for a NGNP licensing approach
  - Part 50 or Part 52 licensing path
  - Deterministic and/or Risk-informed

    (Review of white papers on gas-cooled reactor technologies)
- ACRS to comment on approach

Acronyms

DOE	Department of Energy
EPACT	Energy Policy Act
H2	Hydrogen
GENIV	Generation IV
NERAC	Nuclear Energy Research Advisory Committee (Established by DOE)
NGNP	Next Generation Nuclear Plant
PIRT	Phenomena Identification and Ranking Table
Triso	Tri-Structural Isotropic Fuel Particle Coating
UO_2	Uranium Oxide